

PATENT ABSTRACTS OF JAPAN

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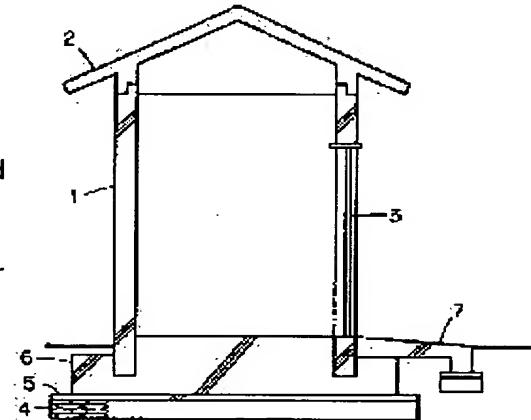
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(54) PREFABRICATED SIMPLE SHED

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a prefabricated simple shed easily carried and easily assembled at an installation site by lightening the weight of precast concrete members.

SOLUTION: Sidewall members 1 and roof members 2 composed of light-weight precast concrete of air dried specific gravity 1.5 or less and compression strength 20 N/mm² or more are prepared beforehand using light-weight aggregate. At the installation site, after the side wall members 1 are mounted on a foundation concrete 6 placed till prescribed thickness, the residual concrete is placed in the inside and the outer circumference of the side wall members 1 respectively to integrate the side wall members 1 with the foundation concrete 6 and the roof member 2 is joined on the sidewall members 1.



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CLAIMS

[Claim(s)]

[Claim 1]A collapsible simple hut which assembling a lightweight precast concrete member more than 1.5 or less air dried specific gravity, and compressive strength ² of 20Ns/mm, and forming including a lightweight aggregate.

[Claim 2]The collapsible simple hut according to claim 1 from which a detailed closed cell (several micrometers - about 20 micrometers) is distributed over an inside as for a lightweight aggregate used as coarse aggregate.

[Claim 3]The collapsible simple hut according to claim 1 or 2 whose lightweight aggregates used as coarse aggregate are specific gravity under oven dry 0.5-1.5 and 5.0% or less of water absorption.

[Claim 4]The collapsible simple hut according to any one of claims 1 to 3 whose compression strength of a lightweight aggregate used as coarse aggregate is more than 700N.

[Claim 5]The collapsible simple hut according to any one of claims 1 to 4 whose lightweight aggregate used as a fine aggregate is hard perlite.

[Claim 6]The collapsible simple hut according to any one of claims 1 to 5 which does not contain air bubbles according [a lightweight precast concrete member] to a frothing agent.

[Claim 7]The collapsible simple hut according to any one of claims 1 to 5 where a lightweight precast concrete member does not contain a fibrous reinforcing member.

[Claim 8]The collapsible simple hut according to any one of claims 1 to 7 which a lightweight precast concrete member kneads only cement, a lightweight aggregate, a water reducing agent, an AE agent, and kneading water, and is formed.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a collapsible simple hut, especially relates to the public lavatory of a park, a rest station, a stand or a hut, a simple house required at the time of a disaster, a railroad, a bus, the geisha restaurant place of a taxi, a storage shed, etc. in the simple assembly-type hut using a useful lightweight precast concrete member.

[0002]

[Description of the Prior Art] Although simple huts, such as a storage shed, had many things made from a steel plate conventionally, since it is scarce, concrete came to be used for intensity and endurance to the public lavatory etc. In this case, the worker went out to the installation site of the simple hut, and was working the assembly of a steel rod, installation of a mold, placing of concrete, etc. at that spot. However, since work with many man days was done in the installation site, a construction period not only delays, but according to the weather, the construction period became unstable, and since there was still more work [at the spot], there was inconvenience that a work labor cost increased. It was difficult to obtain the hut which is rich in design nature by low cost. Then, a simple hut is divided into a roof member, a wall member, a floor member, etc., factory production of these members is carried out, and the simple hut made from precast concrete carried and assembled to an installation site is proposed.

[0003]

[Problem(s) to be Solved by the Invention] However, it had weight with big roof member made from concrete, wall member, floor member, etc., and in order to carry these members from the factory which is not necessarily a short distance to an installation site, there was a problem that a transportation cost cost dearly. There was also a problem that it was unmitigable, so that each member becomes small too much, without the ability to perform division into the member

which was suitable for the assembly in the spot depending on setting positions, such as the heart of the mountains or a height, for transportation conditions, such as load limits, and the construction period and labor cost of a field assembly expect. By attaining a weight saving, securing [were made in order that this invention might cancel such a problem, and] the intensity which needs a precast concrete member, Conveyance aims at providing the collapsible simple hut which can be assembled easily [it is easy and] in various installation sites where conditions differ.

[0004]

[Means for Solving the Problem] Including a lightweight aggregate, a collapsible simple hut concerning this invention assembles a lightweight precast concrete member more than 1.5 or less air dried specific gravity, and compressive strength ² of 20Ns/mm, and is formed. For this reason, a weight saving can be attained securing necessary strength as a simple hut, as a result, conveyance of a lightweight precast concrete member and assembly operation in a construction site become easy, and mitigation of cost and a construction period is made.

[0005]In order to obtain the above precast units, by specific gravity under oven dry 0.5-1.5 of coarse aggregate. What specified water absorption to 5.0% or less as a range which can be used without performing prewetting, That is, even if it does not use a lightweight aggregate which can secure 5.0% or less of water absorption by forming a detailed closed cell (several micrometers - about 20 micrometers) in an inside of aggregate, admixture, etc., it is preferred to use a lightweight aggregate beyond compression strength 700N in which necessary strength is obtained easily. As such aggregate, there is an ASANO super light by Taiheiyo Cement Corp. A fine aggregate is also lightweight, and there is little water absorption, for example, it is preferred to use lightweight aggregates, such as hard perlite. If these are used together and a water cement ratio is made low with 40% or less by use of a water reducing agent etc., By 1.5 or less (that is, range which can acquire the clear mitigation effect by attaining about 60% of weight saving of the conventional plain concrete) air dried specific gravity, lightweight concrete more than compressive strength ² of 20Ns/mm can be obtained easily. If this lightweight concrete is used, a lightweight precast concrete member can be manufactured without usually changing sectional shape of a concrete member.

[0006]When not using a lightweight aggregate beyond compression strength 700N, chemical admixture, such as cement admixture, such as silica fume, silica powder, slag powder, and limestone powder, and a hydration accelerator, may be added if needed. Therefore, according to this invention, as a lightweight precast concrete member, It is possible to attain neither a weight saving nor high intensity-ization like before by weight saving by cellular mixing with a frothing agent or a fibrous reinforcing member, and to specifically knead and form only cement, a lightweight aggregate, a water reducing agent, an AE agent, and kneading water. Kinds, such as cement, a water reducing agent, and an AE agent, are not limited. What is necessary

is just to use a manufacturing method of a lightweight precast concrete member of this invention, combining a conventional method suitably, and a conventional device may be sufficient also as a device. Although an execution method of a collapsible simple hut of this invention can also use an execution method of the conventional collapsible hut, since it is lightweight, a member can be enlarged, a joined part can be lessened, and a thing of performance stable in simpler construction can be made.

[0007]

[Embodiment of the Invention]Hereafter, this embodiment of the invention is described based on an accompanying drawing. The collapsible simple hut concerning this embodiment of the invention applied to the storage shed is shown in drawing 1 and drawing 2. This storage shed comprises the side wall member 1 and the roof member 2 made from both lightweight precast concretes. An opening is formed in one wall surface of the side wall member 1, and the door 3 of the double door is formed here. The flat-surface sectional view of a storage shed is shown in drawing 3. The side wall member 1 is formed in the frontage of 3.5 m, the depth of 2.3 m, and 150 mm in thickness, for example by an outer size, arranges a wall surface on all sides to flat-surface rectangular shape, and makes it integral construction. The roof member 2 is what made integral construction the roof section which made two rectangle panels incline mutually, the gable-end part, etc., and fits into the upper bed part of the side wall member 1 at the time of the assembly of a simple hut.

[0008]Such the side wall member 1 and the roof member 2 are manufactured beforehand at the factory. The example of manufacture of the lightweight precast concrete member at this time is shown below.

(1) Material-of-construction cement : ordinary portland cement (made by Taiheiyo Cement Corp.)

Kneading water hard perlite : Tap water fine aggregate : (KP-1, KP-3 (made by Taiheiyo Cement Corp.))

Lightweight fine aggregate mixed by the volume ratio 1:1, the saturated density 1.3, specific gravity under oven dry 1.2, 8.3% of water absorption

Coarse aggregate : ASANO super light (Taiheiyo Cement Corp. make and compression strength 1000N, the saturated density 0.85, the specific gravity under oven dry 0.83, water absorption 2.40 %)

Admixture : water reducing agent (LEO build SP-8S, the product made from NMB, Inc.)

AE agent (the micro exhaust air 775S, product made from NMB, Inc.)

[0009](2) After feeding cement, a fine aggregate, and coarse aggregate into a pan mold mixer by the combination shown in combination and the kneading table 1 and performing empty kneading for about 15 seconds, Lightweight concrete was prepared by putting in 80% of water of the whole kneading water, kneading for 30 seconds, throwing in further remaining amount of

water and admixture (water reducing agent + AE agent), and kneading for 90 seconds. The compressive strength in age 28 days is shown in Table 2.

[0010]

[Table 1]

コンクリート 比重	水セメント比 (%)	細骨材率 (%)	空気量 (%)	単位量 (Kg/m ³)				減水剤 (セメント量×%)	AE剤 (セメント量×%)
				水	セメント	細骨材	粗骨材		
1.3	32	46	5	151	472	351	305	0.75	0.004

[0011]

[Table 2]

	NO. 1	NO. 2	NO. 3	平均
標準σ ² 8 (N/mm ²)	26.1	26.9	28.1	27.0

[0012](3) After setting a spacer and a steel rod to shaping and a care-of-health mold, lightweight concrete after kneading in a mold was slushed, and stick vibrator performed the compaction. Surface finish was considered as trowel finishing. The side wall member 1 did not produce separation of aggregate, although it installed, the mold was uprighted like the time and lightweight concrete was ***** (ed) from the upper bed part. On the other hand, the roof member 2 was installed, with the time, formed the mold in the upside down direction, and placed lightweight concrete. Then, care of health of introduction 3 hours and, and steam curing 4 hours was performed.

[0013]Thus, the side wall member 1 and the roof member 2 which will consist of lightweight precast concrete of intensity (refer to Table 2)² of 27.0Ns/mm for 28 days from air dried specific gravity 1.3 and the compressive strength test based on JIS A 1108 were created. The door 3 of the double door was attached to the opening of the side wall member 1 at the factory. At the time of creation of the side wall member 1 in a factory, and the roof member 2, the tile was stuck and decoration processing was performed to the outer wall side.

[0014]These lightweight precast concrete members were carried from the factory to the installation site, and assembly operation was performed. First, as shown in drawing 4, the oversite concrete 5 was placed on the crushed stone 4, and the base concrete 6 was placed on this oversite concrete 5. After it placed the base concrete 6 on the oversite concrete 5 by predetermined thickness at the beginning and it laid the side wall member 1 on it, it placed the remaining concretes to the inside and peripheral part of the side wall member 1, respectively,

and was made to unite them with the side wall member 1. Next, carried the roof member 2 on the side wall member 1, the roof member 2 was made to fit into the side wall member 1 using the level difference formed in both joined part, respectively, and construction of the storage shed was made to complete. The dog run 7 by cast-in-place concrete can also be formed before the door 3.

[0015]Since a very lightweight precast concrete member called 1.5 or less air dried specific gravity is used by this invention as above-mentioned though compressive strength is more than 20N/mm^2 , the transportation cost of a member is mitigable, and. In spite of transportation conditions, such as load limits, one member can be enlarged and the assembly operation in the spot and mitigation of a construction period are attained.

[0016]If the gas concrete which was made to contain the air bubbles by which it was generated with the frothing agent, and carried out the weight saving, and the fiber reinforced concrete which makes the thinning of a member possible by including fibrous reinforcing members, such as a steel fiber, and reinforcing are used, can create a lightweight precast concrete member, but. Special art is needed for the manufacture in respect of air bubbles, a fibrous reinforcing member's uniform dispersion, or the ease of carrying out of mixing, and these gas concrete and fiber reinforced concrete become what has the complicated work sequence at the time of manufacture, when it is going to enlarge a member. On the other hand, the lightweight precast concrete member used by this invention, Since a weight saving is attained securing necessary strength by including a specific lightweight aggregate which was mentioned above, it can manufacture with the almost same work sequence as the precast concrete member which uses plain concrete.

[0017]According to the embodiment mentioned above, although the storage shed was explained, this invention cannot be restricted to a storage shed and can be broadly applied to collapsible simple huts, such as the public lavatory of a park, a rest station, a stand, a simple house required at the time of a disaster, a railroad, a bus, a geisha restaurant place of a taxi. Although the hut installed in a mountain slope had conventionally many which use the wood which cannot be said that a durable field is enough from fields, such as conveyance of materials, and supply, Since a member will become lightweight if this invention is applied, it becomes carriable [from a factory] to a mountain slope, and the collapsible hut made from precast concrete can be realized. According to this invention, since the large-sized member which unification followed from before using good lightweight concrete of a light weight and an intensity manifestation is obtained easily, the simple hut which the correspondence of to complicated shape was attained and was rich in nearby design nature from a point of not only the point of a facework but shape is obtained.

[0018]

[Effect of the Invention] As explained above, the collapsible simple hut concerning this

invention, Since the lightweight precast concrete member more than 1.5 or less air dried specific gravity, and compressive strength ² of 20Ns/mm is assembled and formed, including a lightweight aggregate, A weight saving can be attained securing the necessary strength as a simple hut, conveyance of a member and the assembly operation in a construction site become easy, and mitigation of cost and a construction period is made. Such a lightweight precast concrete member, For example, as coarse aggregate, a detailed closed cell (several micrometers - about 20 micrometers) is distributed over an inside, it is specific gravity under oven dry 0.5-1.5 and 5.0% or less of water absorption, and it is possible to manufacture, when compression strength uses hard perlite as a fine aggregate using the lightweight aggregate beyond 700N. As a lightweight precast concrete member, in order to attain a weight saving or high intensity-ization, it is not necessary to include the air bubbles or the fibrous reinforcing member by a frothing agent like the former. The lightweight precast concrete member which kneads only cement, a lightweight aggregate, a water reducing agent, an AE agent, and kneading water, and is specifically made into the above-mentioned purpose can be formed.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is a front view showing the collapsible simple hut concerning this embodiment of the invention.

[Drawing 2] It is a side view showing the collapsible simple hut concerning an embodiment.

[Drawing 3] It is a flat-surface sectional view showing the collapsible simple hut concerning an embodiment.

[Drawing 4] It is a side sectional view showing the collapsible simple hut concerning an embodiment.

[Description of Notations]

1 Side wall member

2 Roof member

3 Door

4 Crushed stone

5 Oversite concrete

6 Base concrete

7 Dog run

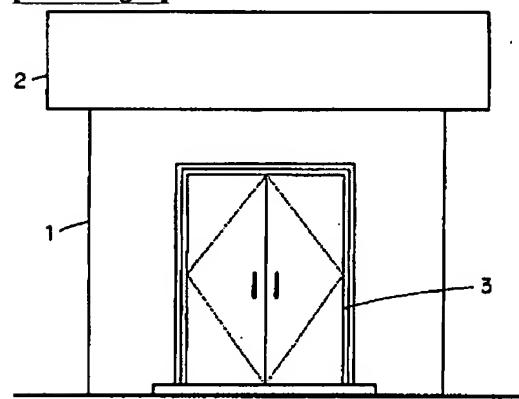
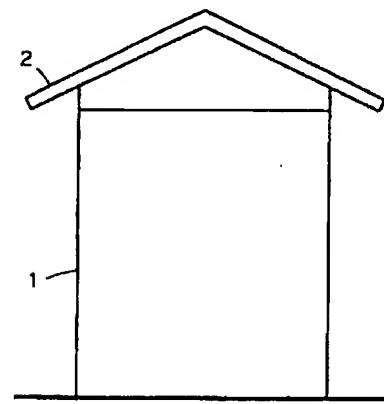
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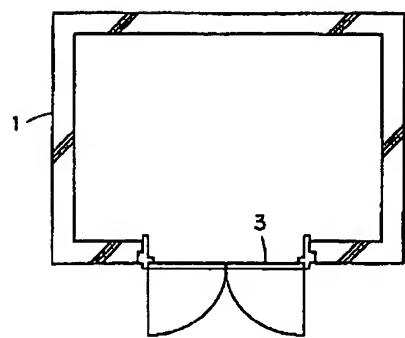
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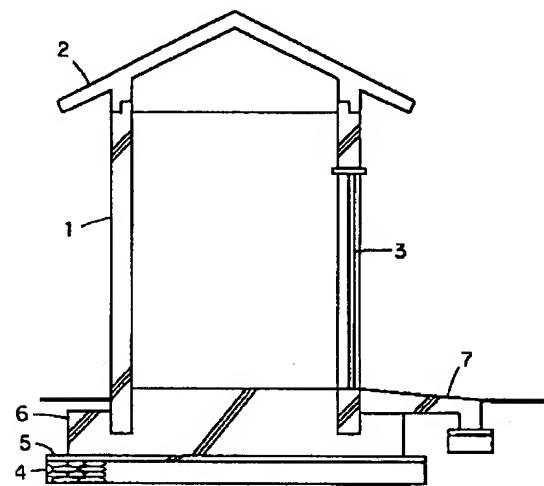
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DRAWINGS

[Drawing 1]**[Drawing 2]****[Drawing 3]**



[Drawing 4]



[Translation done.]

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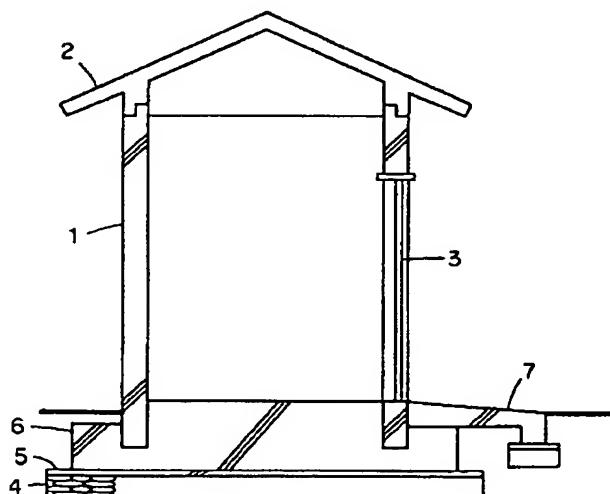
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(54)【発明の名称】 組立式簡易小屋

(57)【要約】

【課題】 この発明は、プレキャストコンクリート部材の軽量化を図ることにより、運搬が容易で且つ設置現場で容易に組み立てができる組立式簡易小屋を提供することを課題とする。

【解決手段】 軽量骨材を用いて気乾比重1.5以下、圧縮強度20N/mm²以上の軽量プレキャストコンクリートからなる側壁部材1及び屋根部材2を予め作成する。設置現場において、所定の厚さになるまで打設した基礎コンクリート6の上に側壁部材1を載置した後、残りのコンクリートを側壁部材1の内部及び外周部にそれぞれ打設して側壁部材1を基礎コンクリート6に一体化させ、側壁部材1の上に屋根部材2を接合する。



【特許請求の範囲】

【請求項1】 軽量骨材を含み且つ気乾比重1.5以下、圧縮強度20N/mm²以上の軽量プレキャストコンクリート部材を組み立てて形成されることを特徴とする組立式簡易小屋。

【請求項2】 粗骨材として用いる軽量骨材は、内部に数μm～20μm程度の微細な独立気泡が分布されたものである請求項1に記載の組立式簡易小屋。

【請求項3】 粗骨材として用いる軽量骨材は、絶乾比重0.5～1.5、吸水率5.0%以下である請求項1または2に記載の組立式簡易小屋。

【請求項4】 粗骨材として用いる軽量骨材は、圧壊強度が700N以上である請求項1～3のいずれか一項に記載の組立式簡易小屋。

【請求項5】 細骨材として用いる軽量骨材は、硬質バーライトである請求項1～4のいずれか一項に記載の組立式簡易小屋。

【請求項6】 軽量プレキャストコンクリート部材は、起泡剤による気泡を含まない請求項1～5のいずれか一項に記載の組立式簡易小屋。

【請求項7】 軽量プレキャストコンクリート部材は、繊維状の補強材を含まない請求項1～5のいずれか一項に記載の組立式簡易小屋。

【請求項8】 軽量プレキャストコンクリート部材は、セメント、軽量骨材、減水剤、AE剤及び混練水のみを練り混ぜて形成される請求項1～7のいずれか一項に記載の組立式簡易小屋。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、組立式簡易小屋に係り、特に公園の公衆トイレ、休憩所、売店、あるいは山小屋、災害時に必要な簡易家屋、鉄道やバス、タクシーの待合所、物置小屋等に有用な軽量プレキャストコンクリート部材を用いた組立式の簡易小屋に関する。

【0002】

【従来の技術】従来、物置小屋等の簡易小屋は鋼板製のものが多かったが、強度及び耐久性に乏しいため、公衆トイレ等に対してはコンクリートが用いられるようになった。この場合、作業者が簡易小屋の設置現場へ出向く、その現場で鉄筋の組立、型枠の設置並びにコンクリートの打設等の作業を行っていた。しかしながら、設置現場で工数の多い作業を行うので、工期が長期化するだけでなく、天候に応じて工期が不安定になり、さらに現場での作業が多いため作業労務費が嵩むという不都合があった。また、意匠性に富む小屋を低成本で得ることが困難であった。そこで、簡易小屋を屋根部材、壁部材、床部材等に分割してこれらの部材を工場生産し、設置現場へ運搬して組み立てるプレキャストコンクリート製の簡易小屋が提案されている。

【0003】

【発明が解決しようとする課題】しかしながら、コンクリート製の屋根部材、壁部材、床部材等が大きな重量を有し、必ずしも近距離でない工場から設置現場までこれらの部材を運搬するために輸送コストが高くつくという問題点があった。また、山奥あるいは高所等の設置場所によっては、重量制限等の輸送条件のため現場での組立に適した部材への分割ができずに各部材が小さくなりすぎ、現場組立の工期や労務費が期待するほど軽減できないという問題点もあった。この発明はこのような問題点を解消するためになされたもので、プレキャストコンクリート部材の必要な強度を確保しながら軽量化を図ることにより、運搬が容易で且つ条件の異なる種々の設置現場で容易に組み立てることができる組立式簡易小屋を提供することを目的とする。

【0004】

【課題を解決するための手段】この発明に係る組立式簡易小屋は、軽量骨材を含み且つ気乾比重1.5以下、圧縮強度20N/mm²以上の軽量プレキャストコンクリート部材を組み立てて形成されるものである。このため、簡易小屋としての必要強度を確保しつつ軽量化を図ることができ、その結果、軽量プレキャストコンクリート部材の運搬、施工現場における組立作業が容易となり、コスト及び工期の軽減がなされる。

【0005】上記のようなプレキャスト部材を得るには、粗骨材の絶乾比重0.5～1.5で、プレウェッ칭ングを行うことなく使用できる範囲として吸水率を5.0%以下に規定したもの、すなわち骨材内部に微細な数μm～20μm程度の独立気泡を形成することによって吸水率5.0%以下を確保することができる軽量骨材、及び混和剤等を使用しなくても容易に必要強度が得られる圧壊強度700N以上の軽量骨材を使用することが好ましい。このような骨材としては、太平洋セメント株式会社製のアソノスーパークリートがある。細骨材も軽量で吸水率の少ない、例えば硬質バーライト等の軽量骨材を使用することが好ましい。また、これらを併用し減水剤等の使用により水セメント比を40%以下と低くすれば、容易に気乾比重1.5以下（つまり従来の普通コンクリートのおよそ60%の軽量化を図ることにより、明確な軽減効果を得ることができる範囲）で、圧縮強度20N/mm²以上の軽量コンクリートを得ることができる。この軽量コンクリートを用いれば、普通コンクリート部材の断面形状を変えることなく軽量プレキャストコンクリート部材が製造できる。

【0006】なお、圧壊強度700N以上の軽量骨材を使用しない場合には、必要に応じてシリカヒューム、珪石粉、スラグ粉、石灰石粉等のセメント混和剤や水和促進剤等の化学混和剤を添加してもよい。したがって、本発明によれば軽量プレキャストコンクリート部材としては、従来のように起泡剤での気泡混入による軽量化、あるいは繊維状の補強材等により軽量化や高強度化を図ら

なくてもよく、具体的にはセメント、軽量骨材、減水剤、AE剤及び混練水のみを練り混ぜて形成することよい。セメント、減水剤、AE剤等の種類は限定されない。なお、本発明の軽量プレキャストコンクリート部材の製造方法は、従来の方法を適宜組み合わせて用いればよく、装置も慣用の装置でよい。また、本発明の組立式簡易小屋の施工方法も従来の組立式小屋の施工方法が使用できるが、軽量であるため部材を大きくし接合部を少なくすることができ、より簡便な施工で安定した性能のものを作ることができる。

【0007】

【発明の実施の形態】以下、この発明の実施の形態を添付図面に基づいて説明する。図1及び図2に物置小屋に適用したこの発明の実施の形態に係る組立式簡易小屋を*

(1) 使用材料

セメント：普通ポルトランドセメント（太平洋セメント株式会社製）
混練水：水道水
細骨材：硬質パーライト（KP-1, KP-3（太平洋セメント株式会社製）
を体積比1:1で混合した軽量細骨材、表乾比重1.3、絶乾比重1.2、吸水率8.3%）
粗骨材：アサノスーパーライト（太平洋セメント株式会社製、圧壊強度1000N、表乾比重0.85、絶乾比重0.83、吸水率2.40%）
混和剤：減水剤（レオビルドSP-8S、株式会社エヌエムビー製）
AE剤（マイクロエア775S、株式会社エヌエムビー製）

【0009】(2) 配合及び混練

表1に示す配合でセメント、細骨材及び粗骨材をバン型ミキサーに投入して空練りを約15秒間行った後、混練水全体の80%の水を入れて30秒間混練し、さらに残りの水量と混和剤（減水剤+AE剤）を投入して90秒※30

*示す。この物置小屋は、共に軽量プレキャストコンクリート製の側壁部材1と屋根部材2とから構成されている。側壁部材1の一つの壁面には開口部が形成され、ここに両開きのドア3が設けられている。図3に物置小屋の平面断面図を示す。側壁部材1は、例えば外寸で間口3.5m、奥行き2.3m、厚さ150mmに形成され、四方の壁面を平面矩形状に配置して一体構造としたものである。屋根部材2は、2枚の矩形パネルを互いに傾斜させた屋根部と切妻壁部等とを一体構造としたもので、簡易小屋の組立時には側壁部材1の上端部に嵌合される。

【0008】このような側壁部材1と屋根部材2とを工場で予め製造しておく。このときの軽量プレキャストコンクリート部材の製造例を以下に示す。

※間混練することにより軽量コンクリートを調製した。材令28日での圧縮強度を表2に示す。

【0010】

【表1】

コンクリート 比重	水セメント比 (%)	細骨材率 (%)	空気量 (%)	単位量 (kg/m ³)				減水剤 (セメント量×%)	AE剤 (セメント量×%)
				水	セメント	細骨材	粗骨材		
1.3	32	46	5	151	472	351	305	0.75	0.004

【0011】

★ ★ 【表2】

	NO. 1	NO. 2	NO. 3	平均
標準σ28 (N/mm ²)	26.1	26.9	28.1	27.0

【0012】(3) 成形及び養生

型枠にスペーサ及び鉄筋をセットした後、型枠内に混練後の軽量コンクリートを流し込み、棒バイブレータにより締め固めを行った。表面仕上げは金ごて仕上げとした。なお、側壁部材1は、据え付け時と同様に型枠を直立させ、その上端部から軽量コンクリートを締打ちしたが、骨材の分離は生じなかった。一方、屋根部材2は、

据え付け時とは上下逆方向に型枠を形成して軽量コンクリートの打設を行った。その後、前置き3時間及び蒸気養生4時間の養生を行った。

【0013】このようにして、気乾比重1.3、JIS A 1108に準拠した圧縮強度試験より28日強度(表2参照)27.0N/mm²の軽量プレキャストコンクリートからなる側壁部材1及び屋根部材2を作成し

た。さらに、工場において、側壁部材1の開口部に両開きのドア3を取り付けておいた。なお、工場における側壁部材1及び屋根部材2の作成時に外壁側にタイルを貼り装飾加工を施した。

【0014】これらの軽量プレキャストコンクリート部材を工場から設置現場に運搬して組立作業を行った。まず、図4に示されるように、碎石4の上に捨てコンクリート5を打設し、この捨てコンクリート5の上に基礎コンクリート6を打設した。基礎コンクリート6は、最初に所定の厚さで捨てコンクリート5の上に打設し、その上に側壁部材1を載置した後、残りのコンクリートを側壁部材1の内部及び外周部にそれぞれ打設して側壁部材1と一体化させた。次に、側壁部材1の上に屋根部材2を載せ、両者の接合部にそれぞれ形成された段差を利用して屋根部材2を側壁部材1に嵌合させて、物置小屋の構築を完了させた。なお、ドア3の前に現場打ちコンクリートによる犬走り7を形成することもできる。

【0015】上記の通りこの発明では、圧縮強度が20N/mm²以上でありながら気乾比重1.5以下という極めて軽量のプレキャストコンクリート部材を用いるため、部材の運搬コストを軽減することができると共に、重量制限等の輸送条件にも拘わらず一つの部材を大型化することができ、現場での組立作業及び工期の軽減が可能となる。

【0016】なお、起泡剤により発生した気泡を含ませて軽量化した気泡コンクリートや、鋼纖維等の纖維状補強材を含ませて補強することにより部材の薄肉化を可能とする纖維補強コンクリートを使用すれば、軽量のプレキャストコンクリート部材を作成することができるが、これら気泡コンクリートや纖維補強コンクリートは、部材を大型化しようとした場合、気泡や纖維状補強材の均一分散や混入のしやすさの点で、その製造に特殊な技術が必要となり、製造時の作業手順が複雑なものとなる。これに対して、この発明で用いられる軽量プレキャストコンクリート部材は、上述したような特定の軽量骨材を含めることによって必要強度を確保しつつ軽量化を図るので、普通コンクリートを使用したプレキャストコンクリート部材とほぼ同じ作業手順で製造することができる。

【0017】上述した実施の形態では、物置小屋について説明したが、この発明は、物置小屋に限るものではなく、公園の公衆トイレ、休憩所、売店、災害時に必要な簡易家屋、鉄道やバス、タクシーの待合所等の組立式簡易小屋に幅広く適用することができる。また、山間部に設置される山小屋は、従来、資材の運搬、調達等の面から耐久性の面では十分とはいえない木材を使用したもの

が多かったが、この発明を適用すれば、部材が軽量となるため、工場から山間部への運搬が可能となり、プレキャストコンクリート製の組立式山小屋を実現することができる。また、この発明によれば、軽量かつ強度発現の良好な軽量コンクリートを用いて従来より一体化の進んだ大型部材が容易に得られるため、複雑な形状への対応が可能となり表面装飾の点だけでなく形状の点からもより意匠性に富んだ簡易小屋が得られる。

【0018】

10 【発明の効果】以上説明したように、この発明に係る組立式簡易小屋は、軽量骨材を含み且つ気乾比重1.5以下、圧縮強度20N/mm²以上の軽量プレキャストコンクリート部材を組み立てて形成するので、簡易小屋としての必要強度を確保しつつ軽量化を図ることができ、部材の運搬、施工現場における組立作業が容易となり、コスト及び工期の軽減がなされる。このような軽量プレキャストコンクリート部材は、例えば、粗骨材として、内部に数μm～20μm程度の微細な独立気泡が分布され、絶乾比重0.5～1.5、吸水率5.0%以下で、20 圧壊強度が700N以上の軽量骨材を用い、細骨材として硬質バーライトを使用することによって製造することができる。軽量プレキャストコンクリート部材として、軽量化あるいは高強度化を図るためにこれまでのように起泡剤による気泡あるいは纖維状の補強材を含ませる必要がない。具体的には、セメント、軽量骨材、減水剤、AE剤及び混練水のみを練り混ぜて上記目的とする軽量プレキャストコンクリート部材を形成することができる。

【図面の簡単な説明】

30 【図1】この発明の実施の形態に係る組立式簡易小屋を示す正面図である。

【図2】実施の形態に係る組立式簡易小屋を示す側面図である。

【図3】実施の形態に係る組立式簡易小屋を示す平面断面図である。

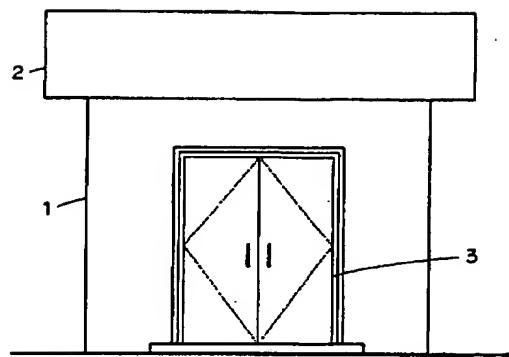
【図4】実施の形態に係る組立式簡易小屋を示す側面断面図である。

【符号の説明】

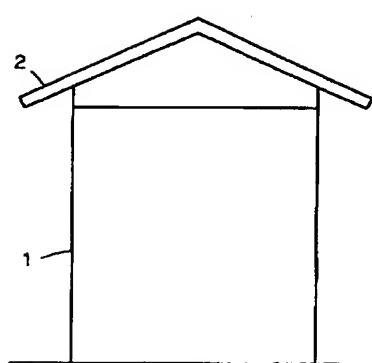
1	側壁部材
2	屋根部材
3	ドア
4	碎石
5	捨てコンクリート
6	基礎コンクリート
7	犬走り

40

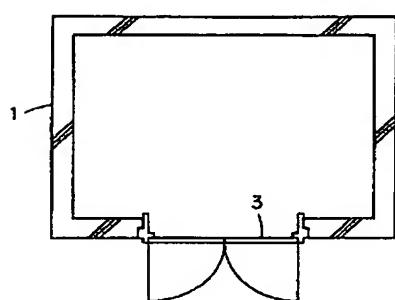
【図1】



【図2】



【図3】



【図4】

